

**CLAIMS:**

1. A method of preventing the onset of a harmful immune response or at least one symptom thereof in a connective tissue of an animal to an antigen, comprising administering the animal with an effective amount of a composition comprising one or  
5 more GAG-peptide complex, wherein at least one GAG-peptide complex comprises 2 or 3 GAG chains.
2. The method according to claim 1, wherein the at least one symptom is selected from the group consisting of inflammation, cell injury, tissue injury, tissue degradation,  
10 redness, tenderness, swelling, joint stiffness, impaired mobility, impaired strength or combinations thereof.
3. The method according to claim 1 wherein the connective tissue is a connective tissue of skin, tendon, ligament, cartilage, bone, fat tissue or combinations thereof.  
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4. The method according to claim 1 wherein the method comprises a prophylactic protocol.
5. The method according to claim 1, wherein the harmful immune response is  
20 prevented.
6. A method of prophylaxis to prevent a harmful immune response in an animal to an antigen or at least one symptom thereof in a connective tissue of the animal, comprising administering the animal with an effective amount of a composition  
25 comprising one or more GAG-peptide complexes wherein at least one GAG-peptide complex comprises 2 or 3 GAG chains.
7. The method according to claim 1, wherein the method induces tolerance in the animal to the antigen.

8. A method of inducing tolerance to prevent a harmful immune response in an animal to at least one antigenic component of cartilage comprising administering the animal with an effective amount of a composition comprising one or more GAG-peptide complexes wherein at least one GAG-peptide complex comprises 2 or 3 GAG chains.
9. The method according to claim 1, wherein the immune response is an autoimmune response.
10. The method according to claim 1, wherein the composition further comprises at least one connective tissue derived polypeptide.
11. The method according to claim 1, wherein the composition is administered orally or topically.
12. The method according to claim 1, wherein the composition is administered orally.
13. The method according to claim 1 wherein the composition is administered topically.
14. The method according to claim 1, wherein the composition is administered in an amount of about 10-20 mg/kg.
15. Use of a composition comprising one or more GAG-peptide complex in the manufacture of a medicament for preventing a harmful immune response or the onset of at least one symptom thereof in a connective tissue of an animal to an antigen, wherein at least one GAG-peptide complex comprises 2 or 3 GAG chains.
16. Use according to claim 15, wherein the connective tissue is a connective tissue of skin, tendon, ligament, cartilage, bone, fat tissue or combination thereof.

17. Use according to claim 15, wherein at least one symptom is selected from the group consisting of inflammation, cell injury, tissue injury, tissue degradation, redness, tenderness, swelling, joint stiffness, impaired mobility, impaired strength or a  
5 combination thereof.
18. Use according to claim 15 wherein the method comprises a prophylactic protocol.
- 10 19. Use according to claim 15, wherein the harmful immune response is prevented.
20. Use of a composition comprising one or more GAG-peptide complexes in the manufacture of a medicament for prophylactic therapy of an animal to prevent a harmful immune response to an antigen or at least one symptom thereof in a connective  
15 tissue, wherein at least one GAG-peptide complex comprises 2 or 3 GAG chains.
21. Use according to claim 15, wherein the method induces tolerance in the animal to the antigen.
- 20 22. Use of a composition comprising one or more GAG-peptide complexes in the manufacture of a medicament for inducing tolerance in an animal to at least one antigenic component of cartilage to prevent a harmful immune response, wherein at least one GAG-peptide comprises 2 or 3 GAG chains.
- 25 23. Use according to claim 15, wherein the immune response is an autoimmune response to at least one antigenic component of cartilage.
24. Use according to claim 15, wherein the composition further comprises at least one connective tissue derived polypeptide.

25. Use according to claim 15, wherein the composition is formulated for oral or topical administration.
26. Use according to claim 15, wherein the composition is formulated for oral  
5 administration.
27. Use according to claim 15 wherein the composition is formulated for topical administration.
- 10 28. Use of a composition comprising one or more GAG-peptide complexes in the manufacture of a medicament for preventing an autoimmune response to at least one antigenic component of cartilage, wherein at least one GAG-peptide complex comprises 2 or 3 GAG chains.
- 15 29. A pharmaceutical composition suitable for preventing the onset of a harmful immune response or at least one symptom thereof in a connective tissue of an animal to an antigen said composition comprising one or more GAG-peptide complex in combination with a pharmaceutically acceptable carrier, wherein at least one GAG-peptide complex comprises 2 or 3 GAG chains.
- 20 30. The pharmaceutical composition according to claim 29 formulated for prophylactic therapy of an animal.
31. The pharmaceutical composition according to claim 29 formulated for inducing  
25 tolerance.
32. The pharmaceutical composition according to claim 28 comprising at least one connective tissue derived polypeptide.
- 30 33. The pharmaceutical composition according to claim 29 wherein the at least one GAG peptide has a molecular weight of greater than about 30,000 Da.

34. The pharmaceutical composition according to claim 29, wherein the GAG-peptide complex and connective tissue derived polypeptide are obtainable from a connective tissue by a method comprising

- 5 (i) incubating a connective tissue in an autolysis medium that provides a buffered pH range of between about pH 2.5 and about pH 8.5 for a time and under conditions sufficient to release at least one GAG-peptide complex and at least one polypeptide; and
- (ii) recovering a mixture comprising at least one GAG-peptide complex and at least  
10 one polypeptide from the autolysis medium.

35. The pharmaceutical composition according to claim 34, wherein the GAG-peptide complex and connective tissue derived polypeptide are obtainable from a connective tissue by a method comprising

- 15 (i) incubating a connective tissue in an aqueous alkaline hydrolysis medium for a time and under conditions sufficient to release at least one GAG-peptide complex and at least one polypeptide; and
- (ii) recovering a mixture comprising at least one GAG-peptide complex and at least one polypeptide from the hydrolysis medium.

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36. The pharmaceutical composition according to claim 34 or claim 35 wherein the GAG-peptide complexes are separated from the polypeptides and recovered.